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RDT&E Project No. Not Available  
USATECOM Project No. 1-6-4030-12  
Report No. DPS-2309



FINAL REPORT ON  
PRODUCT IMPROVEMENT TEST  
OF  
TRUCK, UTILITY, 1/4-TON, 4X4, M151, MODIFIED  
WITH SOLID REAR AXLE  
BY  
C. M. BRYZEK, JR.  
MARCH 1967

ABERDEEN PROVING GROUND  
ABERDEEN PROVING GROUND, MARYLAND

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RDT&E PROJECT NO. NOT AVAILABLE

USATECOM PROJECT NO. 1-6-4030-12

PRODUCT IMPROVEMENT TEST OF  
TRUCK, UTILITY, 1/4-TON, 4X4, M151, MODIFIED  
WITH SOLID REAR AXLE

FINAL REPORT

BY

C. M. BRYZEK, JR.

MARCH 1967

ABERDEEN PROVING GROUND  
ABERDEEN PROVING GROUND, MARYLAND  
21005

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### ABSTRACT

A product improvement test was conducted on a truck, utility, 1/4-ton, 4x4, M151, modified with solid rear axle, at Aberdeen Proving Ground (APG) from 12 April to 30 December 1966. The purpose of this test was to determine the engineering performance and durability characteristics of the vehicle. The vehicle was subjected to limited engineering performance tests and a 20,000-mile durability test. It was concluded that the M151 modified with solid rear axle was unsatisfactory due to lack of durability of a majority of the modified components.

### FOREWORD

Development and Proof Services was responsible for conducting the test and preparing the test report.



18001-1923-ANC-66-/82: Frontispiece.

ABERDEEN PROVING GROUND  
ABERDEEN PROVING GROUND, MARYLAND 21005

USATECOM PROJECT NO. 1-6-4030-12

FINAL REPORT ON PRODUCT IMPROVEMENT TEST OF  
TRUCK, UTILITY, 1/4-TON, 4X4, M151,  
MODIFIED WITH SOLID REAR AXLE

12 APRIL THROUGH 30 DECEMBER 1966

SECTION 1. INTRODUCTION

1.1 BACKGROUND

Production of the truck, utility, 1/4-ton, 4x4, M151, began in 1960. Since introduction of the vehicle, several accidents have occurred involving turnover of the vehicle and fatalities.

In an effort to reduce the accident rate, an M151 was modified to incorporate a solid rear axle and thus provide better handling characteristics by eliminating oversteer tendencies. This modification would also result in a reduced cost.

One modified M151 was sent to Aberdeen Proving Ground, Maryland to undergo engineering performance and endurance tests.

1.2 DESCRIPTION OF MATERIEL

The test vehicle was a standard truck, utility, 1/4-ton, 4x4, M151, modified in the following areas:

- a. Body - Frame. The unitized body - frame structure was modified in the area behind the driver's and assistant driver's seats. The outer frame rails were increased in strength and simplified in construction. The rear suspension leaf-spring attaching brackets were incorporated into the unitized structure by welding them to the redesigned outer rails. The rear cross member of the frame was redesigned and relocated to provide clearance for the new rear axle assembly and attachment of the rear shock absorbers.



- b. Rear Axle. The rear differential carrier and independent wheel drive shafts were replaced by a solid axle assembly (ref Figure 1.2-1).

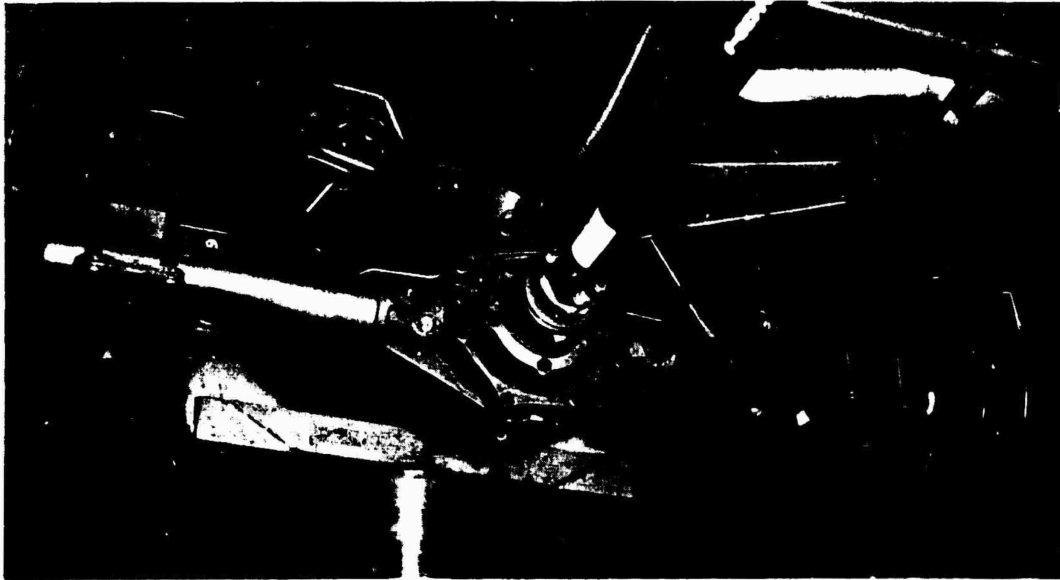


Figure 1.2-1: Solid Rear Axle Installation.

- c. Front Differential Carrier. Since it was desirable to maintain the front independent suspension, an independent differential carrier assembly was incorporated to utilize the maximum number of interchangeable parts with the new rear differential. The differential assembly and pinion-shaft bearing housing are interchangeable from front to rear differential carrier assemblies.
- d. Rear Suspension. The rear suspension coil springs were replaced by 4-leaf half-elliptic springs. Each spring assembly is symmetrical and held together by a center bolt and two clips, retaining three of the four leaves. The springs are attached to the outer frame rail brackets by pins at the front and shackles at the rear.

- e. **Rear Shock Absorbers.** New rear shock absorbers having approximately double the resistance in rebound of standard units to compensate for the additional unsprung weight were installed. They are mounted at their upper ends by bolts inside the redesigned rear frame cross member and at their lower ends to the back side of solid axle tubes (Figure 1.2-1).
- f. **Front Suspension.** Coil springs with a wire diameter of 0.647 inch to 0.653 inch replaced the standard spring having a wire diameter of 0.622 inch to 0.628 inch. Thus, the new springs had a higher spring rate.
- g. **Front Shock Absorbers.** New front shock absorbers using cross pin lower attachment instead of a separate mounting bracket and new designed insulators and washers at their top mountings were installed. Flanged nuts were utilized on the upper control arms to cross member attaching bolts.
- h. **Transmission - Transfer Assembly.** The transfer incorporates a fixed output flange at its rear output shaft (Figure 1.2-2). This flange prevents axial movement of the transfer output gear and bearings on the shaft when the flange is locked to the shaft by a locknut. Rearward movement of the shaft assembly is prevented by a combination bearing retainer and seal housing that bears against the rear bearing outer race. Forward movement is restricted by a snap ring on the rear bearing outer race that acts against the shoulder of the transfer case bore.



Figure 1.2-2: Transfer Case Rear Output.

- i. Propeller Shafts. The front propeller shaft is similar to the standard shaft, but is one inch shorter. The new rear propeller shaft incorporates a splined slip-joint assembly to provide for the variation in shaft length required by the rear suspension motion (Figure 1.2-2).
- j. Exhaust System. The configuration of the tail pipe between the muffler and the exhaust extension at the rear of the vehicle was revised to allow clearance for the rear axle and suspension components.
- k. Brake System. One flexible hose to the rear axle is used in place of the two hoses on a standard vehicle. The hose connects to a tee fitting attached to the top of the differential carrier. Steel tubes lead from the tee fitting to the rear wheel cylinders (Figure 1.2-1)

### 1.3 TEST OBJECTIVES

To determine the engineering performance and durability characteristics of a truck, utility, 1/4-ton, 4x4, M151, modified with a solid rear axle.

### 1.4 SUMMARY OF RESULTS

The outer longitudinal rails of the vehicle frame deformed in the areas of the rear axle bump stops during 9038 durability test miles. At this time reinforcements were added to the rails; however, severe deformation was again encountered during the remaining 11,093 test miles.

The lower durometer rear-axle bump stops installed during the test to reduce the harsh ride failed after 5569 and again at 2003 test miles.

After shallow-water fording of the vehicle, water was found in the rear wheel-bearing cavities.

The snap-ring groove of the the rear-axle pinion-gear shaft pilot failed.

During the final inspection, the endplay of the transfer-case rear-output shaft was found to be excessive at 0.113 inch.

### 1.5 CONCLUSIONS

It was concluded that the truck, utility, 1/4-ton, 4x4, M151, modified with a solid rear axle, was unsatisfactory because of the following defects:

- a. Frame distortion at the rear axle bump stops (ref par. 2.11.3.7).
- b. Failure of the rear axle bump stops (ref par. 2.11.3.8).
- c. Harsher ride than standard M151A1 (ref par. 2.11.3.8).
- d. Lubricant being forced out of the rear-axle breather assembly (ref par. 2.11.3.5).
- e. Inadequate sealing between the rear-axle brake-backing plates and the axle tubes (ref par. 2.11.3.6).
- f. Failure of the rear-axle pinion-gear shaft pilot bearing (ref par. 2.11.3.5).
- g. Difficulty of replacing rear-axle wheel bearing seals and repacking bearings (ref par. 2.11.3.5).
- h. Excessive endplay of the transfer-case rear-output shaft (ref par. 2.11.3.2).
- i. Distortion of the front propeller shaft (ref par. 2.11.3.3).

#### 1.6 RECOMMENDATIONS

Not applicable.

## SECTION 2. DETAILS OF TEST

### 2.1 INTRODUCTION

The test vehicle (USA Reg No. 2J7110) arrived at Aberdeen Proving Ground on 12 April 1966.

After 9038 miles of durability testing, the test program was suspended for 52 days while the vehicle was returned to the production engineering contractor (PEC) for modification.

Drawbar pull and full-load cooling tests were deleted from the test program in accordance with AMCPM-GP, Teletype 12-4855 (Appendix III).

Upon completion of the test program the vehicle was returned to the PEC.

### 2.2 INITIAL INSPECTION AND LUBRICATION

#### 2.2.1 Objectives

To assure that the test vehicle is in good mechanical condition, properly serviced, and ready for test.

#### 2.2.2 Method

The vehicle was given an initial inspection and lubrication as prescribed in the technical publications for the vehicle.

#### 2.2.3 Results

The vehicle was in good mechanical condition and only minor adjustments were made during the initial inspection and lubrication.

#### 2.2.4 Analysis

Not applicable.

## 2.3 PRELIMINARY OPERATION

### 2.3.1 Objective

To operate the vehicle without payload for a prescribed number of miles to insure the proper seating of mating parts.

### 2.3.2 Method

The vehicle was operated on the paved course for a total of 500 miles as follows:

- a. Two hundred miles at speeds up to 30 mph.
- b. Three hundred miles at speeds up to 55 mph.

### 2.3.3 Results

Preliminary operation was completed without incident.

### 2.3.4 Analysis

Not applicable.

## 2.4 WEIGHT DISTRIBUTION

### 2.4.1 Objective

To determine the weight distribution of the vehicle at curb weight, with cross-country payload, and with highway payload.

### 2.4.2 Method

The weight distribution of the vehicle was obtained by the use of loadometers at each wheel.

### 2.4.3 Results

The vehicle weight distributions are shown in Table 2.4-I.

Table 2.4-1. Weight Distributions

<u>Wheel Location</u>	<u>Curb Weight, lb</u>	<u>With Cross- Country Payload<sup>a</sup>, lb</u>	<u>With Highway Payload<sup>b</sup>, lb</u>
Left front	670	750	740
Right front	670	740	770
Left rear	540	880	1050
Right rear	530	880	1060
Total	2410	3250	3620

<sup>a</sup>Rated cross-country payload including crew - 800 pounds.

<sup>b</sup>Rated highway payload including crew - 1200 pounds.

#### 2.4.4 Analysis

Not applicable.

### 2.5 CENTER OF GRAVITY

#### 2.5.1 Objective

To determine the center of gravity of the vehicle at curb weight.

#### 2.5.2 Method

The center of gravity in three planes was determined by the suspension method.

#### 2.5.3 Results

The center of gravity of the vehicle at curb weight was located 46-1/2 inches forward and 6 inches above the centerline of the rear wheel. The lateral location was on the vehicle centerline.

#### 2.5.4 Analysis

Not applicable.

## 2.6 PHYSICAL DIMENSIONS

### 2.6.1 Objectives

To determine the minimum ground clearance and angles of approach and departure of the vehicle at curb weight, with cross-country payload, and with highway payload.

### 2.6.2 Method

The minimum ground clearance and angles of approach and departure were obtained by use of a measuring scale and protractor.

### 2.6.3 Results

The minimum ground clearances and angles of approach and departure of the vehicle are shown in Table 2.6-I.

Table 2.6-I. Physical Dimensions

<u>Dimension</u>	<u>Curb Weight</u>	<u>With Cross-Country Payload</u>	<u>With Highway Payload</u>
Minimum ground clearance	9-5/8 in.	9 in.	9 in.
Angle of approach	63 deg	62 deg	62 deg
Angle of departure	47 deg	43 deg	41 deg

### 2.6.4 Analysis

At the time of receipt, the vehicle at curb weight had approximately a 3-degree nose-down trim, which was distinguishable from a distance and which made the vehicle conspicuous in a group of standard M151A1 trucks.

## 2.7 TURNING RADII

### 2.7.1 Objective

To determine the minimum turning radii of the vehicle to the right and left.



#### 2.7.2 Method

The minimum turning radii of the vehicle were obtained by measuring the circumferences of the circles described at the centerline of the outer front tire while making full 360-degree left and right turns.

#### 2.7.3 Results

Minimum turning radii were 17.8 feet for both full right and left turns.

#### 2.7.4 Analysis

Not applicable.

### 2.8 GRADEABILITY AND SIDE-SLOPE PERFORMANCE

#### 2.8.1 Objectives

To determine maximum sustained speeds of the vehicle on longitudinal slopes of 5 through 60 per cent and operational characteristics of the vehicle on a 40 per cent side slope.

#### 2.8.2 Method

The vehicle was operated on the longitudinal slopes at full throttle in the gear that provided maximum sustained speed. Road speed was obtained with a calibrated fifth wheel. Operational characteristics of the vehicle on a 40 per cent side slope were observed.

#### 2.8.3 Results

Maximum sustained speeds of the vehicle on the longitudinal slopes are shown in Table 2.8-I.

Table 2.8-I. Longitudinal Slope Performance

Slope, %	Road Speed, mph	Gear	
5	<sup>a</sup> 40	3rd,	2-wheel drive
10	39	3rd,	2-wheel drive
15	36	2nd,	4-wheel drive
20	23	2nd,	4-wheel drive
30	15	2nd,	4-wheel drive
40	12	1st,	4-wheel drive
50	10	1st,	4-wheel drive
60	8.9	1st,	4-wheel drive

<sup>a</sup>Not a sustained speed.

Operation of the vehicle on a 40 per cent side slope was satisfactory with respect to engine idle, restart, and stability. The fuel tank filler cap leaked when downgrade.

#### 2.8.4 Analysis

Not applicable.

### 2.9 BRAKING

#### 2.9.1 Objectives

To determine the maximum longitudinal slope on which the parking brake or service brakes would independently hold and control the vehicle in both ascending and descending attitudes.

To determine the distance required to stop the vehicle from a speed of 20 mph on a dry, hard, level road free from loose material.

#### 2.9.2 Method

Vehicle stopping distances were determined by means of a fifth wheel and pousometer with transmission in neutral and maximum pedal effort braking from 20 mph.

### 2.9.3 Results

The parking brake and service brakes held the vehicle stationary in both ascending and descending attitudes on a 60 per cent longitudinal slope.

The average stopping distance of the vehicle from a speed of 20 mph was 20 feet.

### 2.9.4 Analysis

Vehicle braking was adequate.

## 2.10 STANDARD OBSTACLES

### 2.10.1 Objective

To determine if the vehicle could be operated over various standard obstacles without interferences between vehicle components or the vehicle and obstacle profile.

### 2.10.2 Method

The vehicle was visually observed while operating over the frame twister and through the simulated ditch.

### 2.10.3 Results

The vehicle operated satisfactorily over the frame twister and through the simulated ditch.

### 2.10.4 Analysis

Not applicable.

## 2.11 DURABILITY

### 2.11.1 Objective

To determine the durability characteristics of the vehicle.

### 2.11.2 Method

The vehicle was operated for a total of 20,000 miles by completing the following cycle four times.

#### Durability Cycle

<u>Course</u>	<u>Mileage</u>
Paved highway	1050
Belgian block	150
Level cross-country (Perryman No. 1)	1900
Hilly cross-country (Churchville)	1900
Total	5000

All operations were conducted with the following rated loads.

- a. Cross-country. Eight hundred pounds including crew.
- b. Highway. Twelve hundred pounds including crew.

Fifty per cent of all operations were with the following rated towed loads.

- a. Cross-country. Fifteen hundred pounds.
- b. Highway. Two thousand pounds.

The vehicle was shallow-water (21 inches) forded prior to starting operation, after 12,000 miles and at the completion of 20,000 miles.

### 2.11.3 Results

A summary of vehicle operation is shown in Table 2.11-I.

Table 2.11-I. Summary of Operations

<u>Course</u>	<u>Mileage</u>		<u>Total</u>
	<u>Without Towed Load</u>	<u>With Towed Load</u>	
Paved highway	2179	2106	4285
Belgian block	300	301	601
Level cross-country (Perryman No. 1)	3803	3800	7603
Hilly cross-country (Churchville)	3801	3794	7595
Total	10083	10001	20084

The over-all average fuel consumption was 11.0 mpg and average oil consumption was 3080 mpq.

A summary of incidents encountered during the test is contained in Appendix I. The most significant of these incidents are discussed according to functional group.

2.11.3.1 Group 04, Exhaust System. During vehicle operation, the cross-over section of the forward exhaust pipe was rubbing the front propeller shaft, resulting in a hole in the pipe. Upon replacement of the pipe, the static clearance between it and the shaft was 5/16 inch and, although there may have been contact, no holes developed in the pipe during the remaining 13,744 miles of operation.

2.11.3.2 Groups 07 and 08, Transmission - Transfer Assembly. After completion of the durability test, the endplay of the transfer rear output shaft was excessive at 0.113 inch.

2.11.3.3 Group 09, Propeller Shafts. After 7228 test miles, the rear propeller shaft was bent approximately 1/2 inch at the center. During modification by the PEC after 9038 test miles, a newly designed shaft with increased U-joint angularity and tube diameter was incorporated. Also, a rubber windup bumper was installed as shown in Figure 2.11-1 to prevent excessive windup of the rear axle.



Figure 2.11-1: Rear Axle Windup Stop.

During the final inspection after completion of the durability test, it was discovered that the front propeller shaft was slightly deformed (axis offset).

2.11.3.4 Group 10 Front Axle. A 1/2-inch crack developed in the left front lower control arm (Figure 2.11-2). The increased rate of the front springs could have contributed to this crack.



Figure 2.11-2: Crack in Left Front Lower Control Arm.

The front suspension cross member contained cracks at the mounting perch for the left lower control arm (Figure 2.11-3), in the area where the left rear bolt attaches it to the left longitudinal frame rail (Figure 2.11-4) and near both upper spring seats.



Figure 2.11-3: Crack in Front Suspension Cross Member at Front Mounting Perch for Left Lower Control Arm.



Figure 2.11-4: Crack in Front Suspension Cross Member in Area of Left Rear Attaching Bolt.

2.11.3.5 Group 11, Rear Axle. During operation, the rear differential lost lubricant through the differential carrier vent, at the rivets which attach the brake tube bracket to the carrier. After replacement of the vent at 6004 test miles, loss of lubricant through the vent was reduced. However, after 400 miles of operation, it was found that gear oil had been forced past the axle shaft inner seals and was contaminating the lubricant of the rear wheel bearings.

In accordance with directions from ANICPM-GP-TI (Appendix III), rear wheel bearings were not repacked at the normal 12,000 mile interval. However, after 17,801 test miles, rear-differential lubricant was leaking past the left and right rear-axle seals and wheel-bearing outer seals into the brake cavities. Replacement of the rear-axle wheel-bearing outer seals or repacking the bearings required an excessive amount of maintenance time, since the retaining collar must be broken and then the bearing must be pressed off the shaft (Figure 2.11-5). Extreme care must be exercised when pressing the bearing off and on the shaft to prevent bearing damage.

Lubricant leakage was excessive past the pinion-shaft seal after 17,801 test miles. Prior to removal of the pinion-shaft bearings and seal, the shaft endplay was measured and found to be 0.017 inch. Upon replacement of the seal, shaft endplay was adjusted to 0.000 inch.

Examination of the rear axle assembly after completion of the durability test disclosed that the snap-ring groove in the pinion shaft pilot bearing was broken off around the circumference of the bearing (Figure 2.11-6).

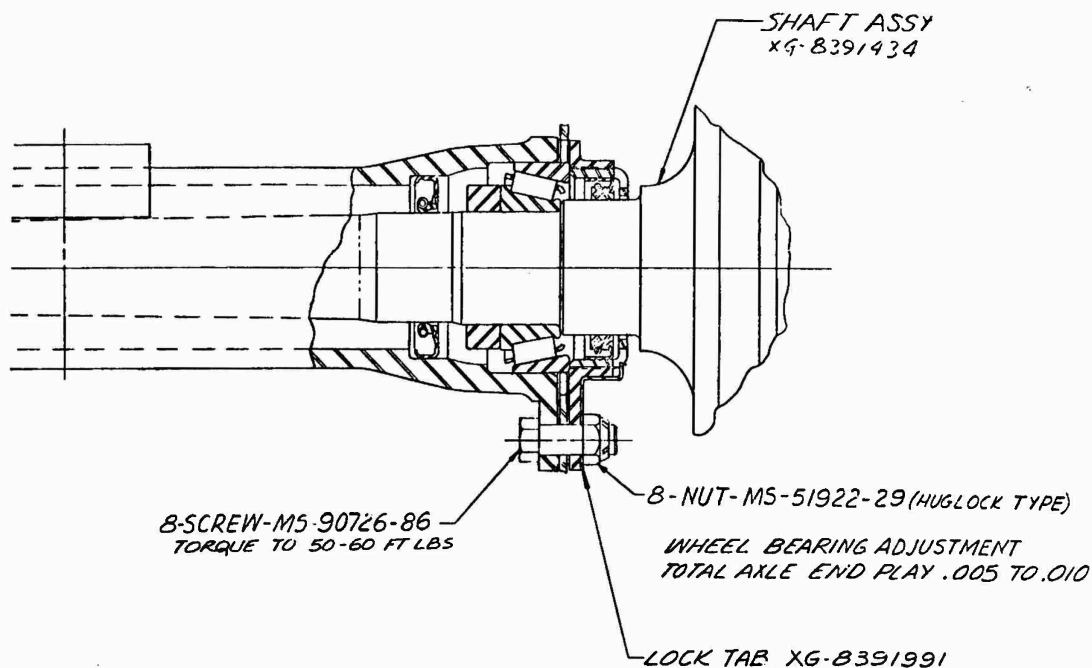


Figure 2.11-5: Axle-Shaft Assembly.

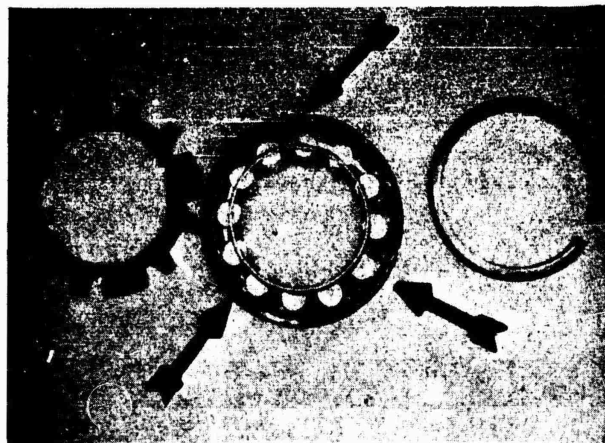


Figure 2.11-6: Snap-Ring Groove Broken Off Pinion-Shaft Pilot Bearing.

The roller ends of the pinion-shaft tapered roller bearing adjacent to the gear were excessively worn although the shaft endplay had not changed from the 0.000 inch adjustment made after 17,801 test miles. The ring gear to pinion gear backlash was 0.016 inch. Gear oil was leaking past the left and right axle-shaft seals and wheel-bearing outer seals which had been replaced at 17,801 test miles.



2.11.3.6 Group 12, Brakes. The gaskets used between the rear wheel brake-backing plates and the axle tubes were inadequate because the surface between the plate and tube is insufficient in the area of the wheel cylinder.

The brakes became very ineffective when gear oil entered the brake cavities.

2.11.3.7 Groups 15 and 18, Frame and Body. The outer longitudinal frame rails became excessively deformed (dented) at the areas where the rear-axle bump stops contact. The test was suspended and the vehicle was returned to the PEC for modification. The modification consisted of straightening the deformed frame rails and adding a reinforcement (Figure 2.11-7) inside each rail.



Figure 2.11-7: Reinforcement of Outer Longitudinal Frame Rail.

During final inspection after completion of the durability test, it was found that the frame rails were again excessively deformed in the areas of the rear-axle bump stops and a crack had developed in the right rail (Figures 2.11-8 and 2.11-9). The inner vertical panel of the right rear wheel well was buckled (Figure 2.11.10), thus indicating that the frame rail reinforcements were unsuccessful in preventing distortion.



Figure 2.11-8: Deformed Left Frame Rail in Contact Area of Rear-Axle Bump Stop.

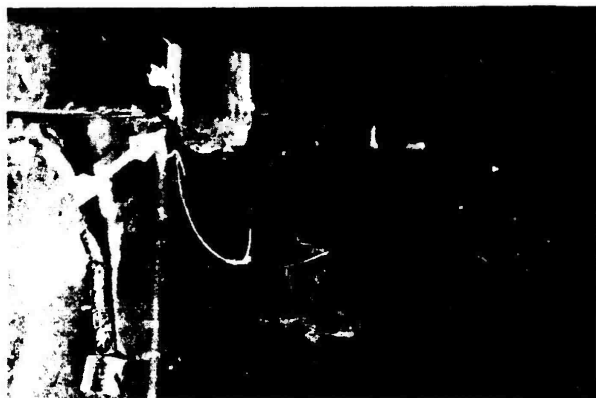


Figure 2.11-9: Deformed Right Frame Rail in Contact Area of Rear-Axle Bump Stop.

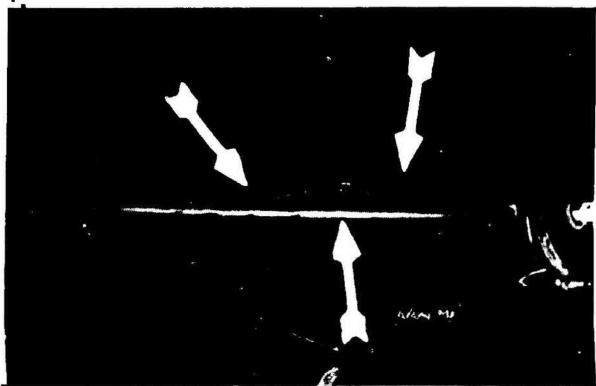


Figure 2.11-10: Buckled Vertical Panel of Right-Rear Wheel Well.

2.11.3.8 Group 16, Springs and Shock Absorbers. The newly designed rear-axle bump stops (lower durometer), installed during vehicle modification to reduce the harsh bump, split in the seam as shown in Figure 2.11-11 after 5569 test miles. A second set of bump stops were installed and had to be replaced after 2003 test miles as a result of deterioration as shown Figure 2.11-12.

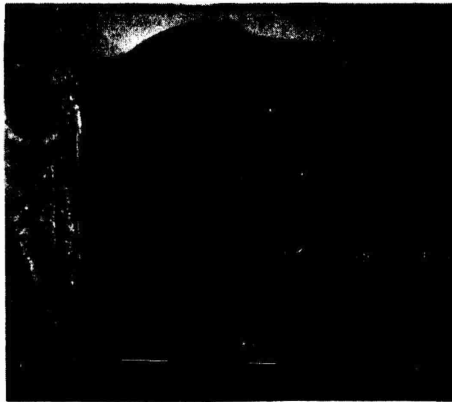


Figure 2.11-11: Split in Seam of Rear-Axle Bump Stop.



Figure 2.11-12: Deteriorated Rear-Axle Bump Stop.

## SECTION 3. APPENDICES

## APPENDIX I - EP SUMMARY SHEETS

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

## TYPES OF INCIDENTS

A - DEFICIENCY D - DESIGN

B - SHORTCOMING M - MANUFACTURING

C - SUGGESTED IMPROVEMENT O = Other

PROJECT:

USATECON PROJECT NO:

SRL GRP	INCIDENT				PART NO.	PART MILEAGE	VEH ODOM	REMARKS
	VEH NO.	ARC NO.	TYPE	ITEM				
01		47	B/M	<u>Engine</u>		9038	9111	Torque, 5 lb-ft. Tightened to 75 lb-ft.
		52	B/M	Right engine-mounting bolt	96906-35298-88			
		47-2	B/M	Valve push-rod gasket	8754320	11109	11199	Leaking at rear.
				Right engine-mounting bolt	9690-35298-88	12199	12289	Loose.
		69	B/M	Left engine-mounting bracket	8754540	15064	15154	Contained seven cracks.
		79	B/D	Left-front engine mount	8754623	20131	20221	Cracked in two places.
02		80	B/D	Right-rear engine mount	8754676	20131	20221	Contained a crack.
				<u>Clutch</u>				
		54	0	Clutch pedal	Jnk		11199	Installed experimental pedal.
		57	A/D	Clutch-release bearing	10900422	11444	11534	Seized.
		57-2	A/D	Clutch-release bearing	10900422	8687	20221	Rough and dry.
		86	B/D	Clutch cross-shaft	10921908	20131	20221	Packing missing on one end and damaged on other end of shaft.
03				<u>Fuel System</u>				
		7	B/M	Fuel-tank cap gasket	7375020	998	0171	Fuel leaked past gasket
		63	B/D	Carburetor diaphragm	Jnk	14607	14697	Stretched and leaking.

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

PROJECT: \_\_\_\_\_  
USATECOM PROJECT NO: \_\_\_\_\_

TITLE OF INCIDENT

- A - DEFICIENCY    D - DESIGN  
B - SHORTCOMING    M - MANUFACTURING  
C - SUGGESTED IMPROVEMENT    O - Other

REL GRP	VEH NO.	INCIDENT			PART NO.	PART MILEAGE	VEH OCC	REMARKS
		APC NO.	TYPE	ITEM				
04				<u>Exhaust System</u>				
		28	B/M	Exhaust pipe	7331256	4542	4615	Hole worn in cross-over pipe due to rubbing front propeller shaft.
		28-2	O	Exhaust pipe	7331256	6404	6477	Replaced cross-over pipe.
		36	B/D	Exhaust-pipe clamp	Unk	7995	8068	Rear clamp on tail pipe loosened.
		36-2	B/D	Exhaust-pipe clamp	Unk	20131	20221	Second from rear clamp broke.
05				<u>Cooling System</u>				
		38	B/M	Upper radiator mount	8754191	8433	8506	Front stud pulled out of rubber body.
		38-2	B/M	Upper radiator mount	8754191	2676	11199	Front stud pulled out of rubber body.
		85	A/M	Engine coolant fan	8342323	20131	20221	Cracked in two places.

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

TYPES OF INCIDENTS

A - DEFICIENCY B - DESIGN

B - SHORTCOMING M - MANUFACTURING

C - SUGGESTED IMPROVEMENT O - Other

PROJECT:

USATECOM PROJECT NO:

SRL GRP	VEN FD.	INCIDENT			PART NO.	PART MILEAGE	VEN ODOM	REMARKS
		ARC NO.	TYPE	ITEM				
06				Electrical System				
		5	B/M	Wiring harness	Unk	677	750	Lower lead to horn loose.
		8	B/M	Alternator cooling fan	Unk	1431	1504	Loose due to cap screw loosening in end of armature shaft.
		14	B/M	High-beam indicator lamp	454732	3239	3312	Burned out.
		20	B/M	Ignition system	NA	3239	3312	Timing shifted from 6° to 9° BTDC.
		26	B/M	Wiring harness	Unk	4247	4320	Lead damage by edge of hood.
		32	O	Ignition-point set	7059538	6404	6477	Adjusted point gap from 0.012 inch to 0.020 inch.
		33	O	Spark plugs	83557724	6404	6477	Adjusted plug gaps from 0.037 inch to 0.030 inch.
		14-2	B/M	High-beam indicator lamp	454732	5669	8981	Burned out.
		43	B/M	Turn-signal lamp	Unk	9038	9111	Left rear lamp burned out.
		32-2	B/M	Ignition-point set	7059538	9038	9128	Replaced.
		33-2	B/M	Spark plugs	83557724	9043	9133	Replaced.
		58	B/M	Turn-signal lamp	Unk	12202	12292	Right front lamp burned out.
		33-3	B/M	Spark plugs	83557724	3433	12569	Breaking down, replaced.
		59	B/M	Oil-pressure sending unit	MS-24538-1	12530	12620	Replaced.
		60	B/O	Oil-pressure gage	MS-24541-1	112914	13004	Replaced.
		14-3	B/M	High-beam indicator lamp	454732	6807	15788	Burned out.
		32-3	B/M	Ignition-point set	7059538	9011	18139	Replaced.
		14-4	B/M	High-beam indicator	454732	4433	20221	Inoperative.

# TITLE OF INCIDENT

- A - DEFICIENCY
- B - DESIGN
- C - MANUFACTURING
- D - MAINTENANCE
- E - SUGGESTED IMPROVEMENT

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

PROJECT: \_\_\_\_\_  
USATECON PROJECT NO: \_\_\_\_\_

SRL GRP	VEN NO.	INCIDENT			PART NO.	PART MILEAGE	VEN CODE	REMARKS
		APC NO.	TYPE	ITEM				
07				<u>Transmission</u>				
		30	B/M	Transmission	-	4662	4735	Hot and seeping lubricant; tightened speedometer drive.
		56	A/M	Cluster gear	7536154	11444	11534	2-1/2 teeth of 3rd gear failed.
		65	B/D	Parking-brake drum-retaining screw	MS-35306-86	14513	14603	Loose; tightened to 65 lb-ft.
		71	B/D	Transmission mounting bolts	MS-35306-88	17185	17275	Threads damaged due to being loose.
08		82	B/D	Shifter-shaft seal	7979499	20131	20221	Seal was leaking. End play of rear output shaft was 0.113 inch.
				<u>Transfer Assembly</u>				
		49	B/D	Rear output-flange lock nut	XG-8392446	9038	9111	Torque, 50 lb-ft; tightened to 100 lb-ft.
		61	B/M	Front output-shaft seal	7996802	12914	13004	Leaking, replaced.
		75	B/D	Front and rear output-shaft seals	7996802		18139	Leaking, replaced.
09		76	B/D	Front output flange	8359974	18049	18139	Worn excessively.
				<u>Propeller Shafts</u>				
		35	A/D	Rear propeller shaft	XG-8391926	7288	7361	Shaft was bent approximately 1/2 inch at the center.
		77	A/D	Front propeller shaft	XG-8391687	18049	18139	Rear U-joint cross was brinnelled.
		35-2	A/D	Rear propeller shaft	XG-8391926	11093	20221	Front U-joint cross was brinnelled.
		77-2	A/D	Front propeller shaft	XG-8391687	20131	20221	Deformed.

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

ITEMS OF INCIDENT

- A - DEFICIENCY    B - DESIGN  
C - SUSTAINING    D - MANUFACTURING  
E - SUGGESTED IMPROVEMENT

PROJECT: \_\_\_\_\_  
USATECOM PROJECT NO: \_\_\_\_\_

ECL. CDP NO.	VEH NO.	INCIDENT			PART NO.	PART MILEAGE	VEH ODOM	REMARKS
		APC NO.	TYPE	ITEM				
10				<u>Front Axle</u>				
		3	B/M	Front-wheel alignment	NA	2	75	Toe-in incorrect.
		4	B/M	Front-wheel alignment shims	8754402 8754403 8754404	2	75	Installed in wrong position.
		15	B/M	Left front-wheel bearing seal	7996801	3239	3312	Outer lip of outer seal deformed.
		16	B/M	Left front-wheel bearing seal	7996804	3239	3312	Outer lip of inner seal deformed.
		17	B/M	Right front-wheel bearing seal	7996804	3239	3312	Outer lip of inner seal deformed.
		21	B/M	Lower front control-arm mounting bolts	8754892 8754893	3239	3312	Torque, 15 to 25 lb-ft; tightened to 55 and 70 lb-ft.
		27	B/M	Steering-stop bolt	KS-35297-87	4542	4615	Missing.
		29	B/D	Front differential fill-plug gasket	-	4662	4735	Copper gasket installed in place of synthetic gasket.
		48	B/D	Upper front control-arm mounting bolts	KG-8392 453	9038	9111	Torque, 45 to 90 lb-ft; tightened to 100 lb-ft.
		15-2	B/D	Front-wheel alignment shim	8754402 8754403 8754404	10165	10255	Missing from left rear side.
		51	B/M	Left-front upper ball joint	8754861	10722	10812	Stud-nut loose; all four.
		64	B/D	Left-front lower-control arm	8754415	14513	14603	One-half inch crack.
		72	A/D	Left-front wheel bearing	7536131 7536132	17538	17628	Replaced as a result of EPR 16-2
		16-2	A/D	Left-front wheel bearing seal	7996804	14316	17628	Inner seal allowed dirt and water into bearings.
		78	A/D	Right-front upper ball joint	8342319	18049	18139	Ball joint and its seals were unserviceable.
		16-3	A/D	Left-front wheel-bearing seal	7996804	2593	20221	Inner seal allowed water into bearings.
		88	A/D	Front cross member	8754456	20131	20221	Cracks.



EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

TITLE OF INCIDENT

- A - DEFICIENCY    B - DESIGN  
C - SHORTCOMING    M - MANUFACTURING  
D - SUGGESTED IMPROVEMENT

PROJECT:

USATECOM PROJECT NO:

SRL CSP	VEN NO.	INCIDENT			PART NO.	PART MILEAGE	VER OCH	REMARKS
		A/C NO.	TYPE	ITEM				
11				<u>Rear Axle</u>				
		9	B/D	Rear-axle assembly	XG-8391 290	1475	1548	Losing lubricant at fill and drain plugs, and pinion seal.
		9-2	B/D	Rear-axle assembly	XG-8391 290	2526	2599	Continued loss of lubricant.
		9-3	B/D	Rear-axle assembly	XG-8391 290	4527	4600	Loss of lubricant increasing.
		9-4	A/D	Rear-axle assembly	XG-8391 290	4629	4702	Loss of lubricant increasing.
		9-5	A/D	Rear-axle assembly	XG-8391 290	4662	4735	Plug gaskets replaced, tube with vent installed.
		9-6	B/D	Rear-axle assembly	XG-8391 290	4935	5008	Lubricant seepage at brake line mounting bracket.
		9-7	B/D	Rear-wheel bearings	NA	6404	6477	GO-90 found in rear wheel bearings.
		73	A/D	Rear-wheel bearing seals	XG-8391 908	17801	17891	Gear oil was leaking past the inner axle seals and the outer wheel- bearing seals into the brake cavities.
		74	A/D	Rear-differential pinion-shaft seal	XG-8392 075	17801	17891	Leaking.
		83	A/D	Rear-differential pinion-shaft pilot bearing	XG-8391 920	20131	20221	Snap-ring groove broken out of bearing.
		73-2	A/D	Rear-wheel bearing seals	XG-8391 908	2330	20221	Gear oil was leaking past seals into brake cavities.
		87	B/O	Rear-axle shafts	Unk	20131	20221	Left and right shaft end plays were 0.043 inch and 0.049 inch.



EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

TITLE OF INCIDENT

A - DEFICIENCY B - DESIGN

C - DEFECTS/STRENGTH DEFICIENCY D - MANUFACTURING

E - MISUSE/FIELD DEPLOYMENT F - Other

PROJECT:

USATCON PROJECT NO:

SOL GRP	VEN NO.	INCIDENT			PART NO.	PART MILEAGE	VEN ODOM	REMARKS
		AVC NO.	TYPE	ITEM				
14				<u>Controls</u>				
		12 84	B/M B/O	Choke-cable retaining clip Steering-column grommet	Unk Unk	2433 20131	2506 20221	Missing. Cracked.
15				<u>Frame and Brackets</u>				
		40	B/D	Longitudinal frame rails	NA	8761	8834	Deformed in areas of rear axle bump stops.
		40-2	A/D	Longitudinal frame rails	NA	9038	9111	Deformation increased and test was suspended.
		62	B/O	Pintle-mounting bolts	Unk	3500	13628	Loose.

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-20)

TYPES OF INCIDENTS

- A - DEFICIENCY D - DESIGN  
B - SHORTCOMING M - MANUFACTURING  
C - SUGGESTED IMPROVEMENT O - Other

PROJECT: \_\_\_\_\_  
USATECOM PROJECT NO: \_\_\_\_\_

SRL CRP	VEH NO.	INCIDENT			PART NO.	PART MILEAGE	VEH OCH	REMARKS
		ARC NO.	TYPE	ITEM				
16		18	B/D	<u>Springs and Shock Absorbers</u>	-	3239	3312	Torque, 25 lb-ft; tightened to 60 lb-ft.
		19	B/D	Left-rear shock-absorber lower mounting bolt	-	3239	3312	Torque, 10 to 18 lb-ft; tightened to 40 lb-ft.
		31	B/D	Front shock-absorber cross-pin mounting bolts	MS-51105-447	6404	6477	Right front bolt torque, 25 lb-ft; tightened to 110 lb-ft.
		44	B/D	Rear spring-mounting bolt	XG-8391 958	9038	9111	Cross-pin mounting bolt broke.
		44-2	O	Right-front shock absorber	XG-8391 958	-	9111	Bushing shifted on pin.
		19-2	A/D	Right-front shock absorber		10084	10174	Installed replacement shock absorber.
		44-3	B/D	Left-front shock-absorber cross-pin mounting bolts	XG-8391 958	11444	11534	One bolt missing; one bolt sheared.
		44-4	A/M	Left-front shock absorber		3413	12541	Low resistance.
		44-5	O	Right-front shock absorber	XG-8391 958	-	12541	Nut on lower end of piston rod came loose.
		44-6	B/D	Right-front shock absorber	XG-8391 958	13032	13122	Installed replacement shock absorber.
		44-7	O	Rear shock absorbers	XG-8391 959	-	13122	Leaking.
		44-8	B/D	Rear shock absorbers	XG-8391 959	3086	14620	Both replaced.
		68	B/D	Left-front shock absorber	XG-8391 321	5569	14697	Threaded portion of upper stud was bent.
		68-2	B/D	Rear-axle bump stops	XG-8391 321	2003	16700	Both stops split.
		44-9	B/D	Rear-axle bump stops	XG-8391 959	7099	20221	Both stops split.
				Right-rear shock absorber				Lack of resistance and pitting chrome.

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 30-20)

TYPE OF INCIDENT

A - DEFICIENCY D - DESIGN

B - SHORTCOMING M - MANUFACTURING

C - SUGGESTED IMPROVEMENT

PROJECT:

USATECOM PROJECT NO:

SRL GRP	VEH NO.	INCIDENT			PART NO.	PART MILEAGE	VEH ODOH	REMARKS
		ARC NO.	TYPE	ITEM				
17		37	B/M	Hood and Fenders Intake-tube panel screw	96906- 35335-18	8201	8274	Front screw broke.
18		6	B/D	Body and Cab Floor-panel drains	Unk	677	750	Ineffective.
		22	A/D	Floor panel	Unk	3854	3927	Panel above muffler too hot.
		39	B/M	Spare-tire mounting bracket	Unk	8511	8584	Cracked and bolt pulled out.
		67	B/M	Spare-tire mounting bolt	Unk	5554	14682	Sheared off.
		67-2	B/M	Spare-tire mounting bolt	Unk	-	-	Lug nut could not be used since replacement bolt had standard threads.
		70	B/D	Floor panel	Unk	17185	17275	3-inch crack in body at rear of transmission tunnel cover.
		81	B/D	Body and frame	Unk	20131	20221	Condition was unsatisfactory.

STAP-US Form 206, 29 Nov 65

**C - SUGGESTED REMOVAL 0-Other**

EP SUMMARY SHEET  
(TECP 700-700  
Interim Pam. 60-200

**PROJECT:**

USATECOM PROJECT NO:

SRL CAP	VEH NO.	INCIDENT			PART NO.	PART MILEAGE	VEH ODOM	REMARKS	
		APC NO.	TYPE	ITEM					
22				<u>Miscellaneous Accessories</u>					
		11	B/M	Left door	8754975	2433	2506	Vertical zipper stuck open. Replaced with modified pump (XG-8392431). Replaced with transparent tube.  Legs cracked were they are welded to frame. Strikes rear end of spring. Installed experimental pump.  Oil was found on both sides of diaphragm.	
		24	O	Vacuum pump	-	4247	4320		
		25	O	Vacuum pump to intake-manifold tube	8754551	4247	4320		
		45	B/D	Rear-seat assembly	Unk	9038	9111		
		46	B/D	Right rear tie-down shackle	XG-8392 431	9038	9111		
		53	O	Vacuum pump		-	11199		
		53-2	B/D	Vacuum pump	XG-8392 431	9022	20221		
				<u>Miscellaneous</u>					
		1	-	Receipt of vehicle	-	0	73		
	2	-	Start of test	-	0	73			
	3	-	Receipt of vehicle after modification	-	9038	9128			

APPENDIX II - PHOTOGRAPHS

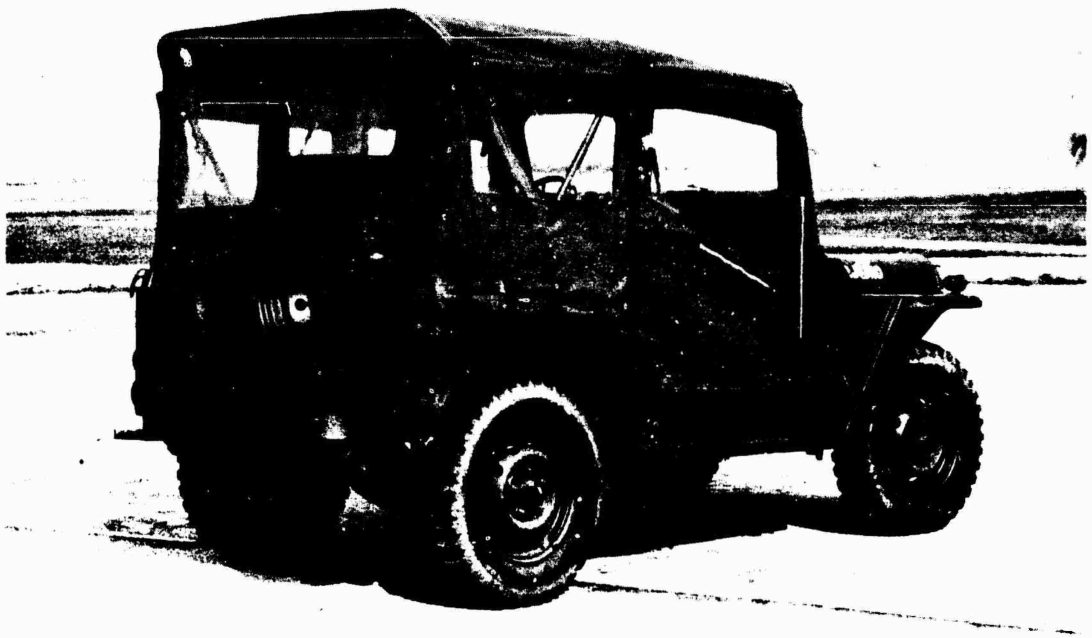


Figure II-1, 1928-66: Three-Quarter Right Rear View.



Figure II-2, 1926/66: TOP: Rear View. BOTTOM: Front View.



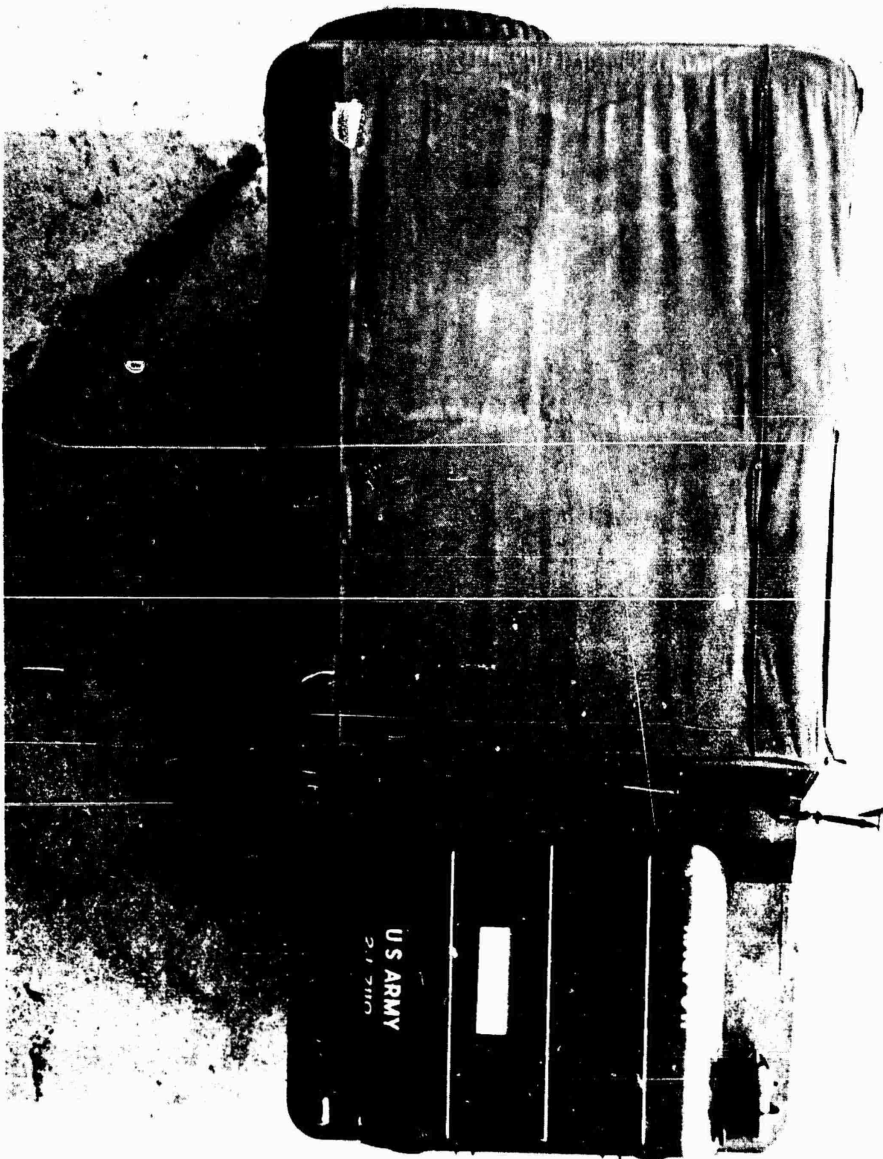


Figure II-3, 1925/66: Top View.

### APPENDIX III - CORRESPONDENCE

PROCUREMENT/WORK DIRECTIVE (AMCR 11-13)				1. TRANSMITTAL CONTROL NUMBER K2-00-001				2. PRIORITY 1 OF 4 PAGES 98			
4. TO: USATECOM Aberdeen Proving Ground ATTN: STEAP-DS-TU Aberdeen, Maryland				5. APPROVED BY: DENNIS MEDREA JR. Ch, Prog Mgt Bz, GPV				6. BASIC FACT CODE: A3L315632			
8. FROM: Project Manager, GPV ATTN: AMCPM-GP-MPM Warren, Michigan 48090				9. AUTHORIZED BY: C. F. NOWOSIELSKI Ch, Prog Mgt Div, GPV				10. PROJECT NO./CATEGORY CODE: 11E3 001 1			
11. CMS TITLE/ITEM NOMENCLATURE: Truck, Utility, 1/2 Ton, 4x4, M151				12. CUSTOMER ORDER NUMBER: AL-G-13310-A1-30				13. FROM: 30-6-GP794-01-30-K2			
14. AMCS CODE: 4510.04, 3101.1				15. ACCOUNTING CLASSIFICATION: 21X2030 664-3000 P4510 20-113				16. DATE DISP: 6 048			
17. QUANTITY ON ORDER:				18. TARGET DATE FOR OBLIGATION:				19. LOCAL USE:			
20. QUANTITATIVE AND CHANGE DATA											
ELEMENT		U/M		QUANTITY		UNIT PRICE		TOTAL PRICE			
a. PRIOR											
b. TOLERANCE USED											
c. INCREASE				N/A							
d. DECREASE											
e. CURRENT				N/A							
f. TOLERANCE								NONE			
21. REPORT CODE: A				22. TYPE OF FINANCING: 6				Funds Certified			
23. DESCRIPTION OF WORK AUTHORIZED/SPECIAL INSTRUCTIONS/INCLOSURES:  The purpose of this order is to provide Program and Funding Authority to conduct a Product Improvement Test on one (1) each Truck, Utility, 1/2 Ton, M151 (with solid axle rear suspension) in accordance with the following test program:  <u>Test Program</u>  1. Testing shall be conducted as follows:  a. OPM 60-25 - Vehicle Inspection.  b. TECP 700-700 - (Interim Pamphlet 60-30) - Preliminary Operation  c. OPM 60-80 - Gradeability and Side Slope Performance (Continued on AMC Form 1006A)  23-1 This is a <input checked="" type="checkbox"/> Project Order, Fixed Price; <input checked="" type="checkbox"/> Project Order, Cost Reimbursable; <input type="checkbox"/> Intra-Army Order for Reimbursable Work or Service. The work or services will be performed as ordered herein. Expiration date of this order: 31 December 1966  23-2 The above terms and conditions are satisfactory and are accepted. Typed Name & Title of Accepting Officer _____ Signature _____ Date _____  24. PACKAGING, PACKING AND MARKING SHALL BE IN ACCORDANCE WITH: _____ Funds cited are available											
25. DISTRIBUTION PATTERN:						BASIC FACT CODE:				STOCK NUMBER:	
DOC	IDENT	SI	FROM	M	U/I	QTY	CUST DOC NUMBER	S	SUPP'L ADDRESS	S	PROJ
0	0	0	0	0	0	0	0	0	0	0	0
UNIT PACK:						CONSIGNEE:					
P & P LVB:						PACKING LEVEL:					
0						0					
0						0					

CONTINUATION OR SUPPORTING SHEET (AMC REG. 1)	PAGE 2 OF 4 PAGES
PRON 30-6-G 94 01-30-K2	AMCMS CODE 4510.04.3101.1

- d. Weight Distribution
- e. TECP 700-700 (Interim Pamphlet 60-65) - Center of Gravity
- f. Execute a sufficient number of Panic Stops to determine braking stability
- g. TECP 700-700 - (Interim Pamphlet 60-50) - Standard Obstacles  
 Operate modified vehicle unloaded and with rated payload over standard obstacle courses appropriate for this class vehicle.
- h. Draw Bar Pull and Full Load Cooling
- i. The following test cycle should be repeated four times for a total of 20,000 miles:
  - (1) Paved Highway - 1,050
  - (2) Level Cross-Country - 1,900
  - (3) Hill Cross-Country - 1,900
  - (4) Belgium Block - 150

2. Reporting on tests shall be as follows:

- a. Problems or difficulties will be reported as they occur by telephone and teletype to AMCPM-GP-TLV (ATTN: Mr. M. E. Burcz and/or Mr. E. E. Woessner, Ext 648/492).
- b. Interim reports will be periodically forwarded to the Project Manager on the progress of the testing.
- c. A formal report will be prepared within thirty (30) days after completion of the test.
- d. Distribution list for final report is as follows:
 

Commanding General  
 US Army Test and Evaluation Command  
 Aberdeen Proving Ground, Maryland 21005  
 ATTN: AMSTE-BF - 1 copy  
           AMSTE-TA - 1 copy

CONTINUATION OR REPORTING SHEET (AMC REG 11-2)	PAGE	3	OF	4	PAGES
	PRON	30-6-AP794 01-30-K2	AMCNS CODE	4510.04.3101.1	

Project Manager's Office,  
General Purpose Vehicles  
Michigan Army Missile Plant  
Warren, Michigan 48090  
ATTN: AMCPM-GP-TLV - 10 copies

Commanding General  
US Army Tank-Automotive Center  
Warren, Michigan 48090  
ATTN: SMOTA-RTT - 20 copies

Commanding Officer  
Yuma Proving Ground  
Yuma, Arizona 85364 - 1 copy

Commanding Officer  
Jefferson Proving Ground  
Madison, Indiana 47251 - 1 copy

Commanding Officer  
Erie Proving Ground  
Port Clinton, Ohio 43452 - 1 copy

Commanding Officer  
US Army Arctic Test Center  
APO Seattle, Washington 98733 - 1 copy

Commanding Officer  
Aberdeen Proving Ground  
Aberdeen Proving Ground, Maryland 21005  
ATTN: STEAP-TL - 2 copies

Commander  
HQ, Defense Documentation Center for Scientific  
and Technical Information  
Cameron Station  
Alexandria, Virginia 22314  
ATTN: Document Service Center - 20 copies

Ford Motor Company  
Special Military Vehicles Operations  
P.O. Box 2053  
Dearborn, Michigan  
ATTN: Mr. C. Maugh - 10 copies

CONTINUATION OR SUPPLEMENTARY SHEET (AMC REG 1.21)	PAGE 4	OF 4	PAGES
	PRON 30-6-794- 01-30-K2	AMCHS CODE 4510.04.3101.1	

3. Replacement parts for the test vehicles will be obtained through normal supply lines by the testing agencies, with the exceptions of those special test parts which are not in the supply system plus any standard component that cannot be obtained from supply.

4. Testing should be conducted on a 24-hour basis, 7 days a week.

5. It is requested that failed vehicle components be sent to the Ford Motor Company, Special Military Vehicles Operations, ATTN: Mr. H. J. Zaidel, 2001 Beech Daly Road, Dearborn Heights, Michigan, for evaluation and consideration of possible engineering changes. Disposition instructions for the test vehicles will be furnished during or after completion of tests.

PROCUREMENT/WORK DIRECTIVE (AMCR 11-15)				1. TRANSMITTAL CONTROL NUMBER K2-03-0004	2. PAGE 1 OF 1 PAGES	3. PAGES 98
TO: CG, USATECOM Aberdeen Proving Ground ATTN: STEAP-D5-TU Aberdeen, Maryland Project Manager				5. APPROVED BY <i>[Signature]</i> DENNIS MEDREN, Jr. Ch. ProgMgtBr, GPV		6. BASIC FACT CODE: A31315633
FROM: AMCPM-GP-MPM Warren, Michigan 48090				7. DATE 6078		8. PROJECT NO./CATEGORY CODE: 11E3 001 1
11. CMS TITLE/ITEM NOMENCLATURE: Truck, Utility, 1/4 T, 4x4, M151				12. CUSTOMER ORDER NUMBER: A1-6-13310-A1-30		13. PRON: 30-6-GP794-02-30-K2
14. AMCRS CODE 4510.04.3101.1				15. ACCOUNTING CLASSIFICATION: 21X2030 664-3000 P4510 20-113		16. DATE DISP: 6078
17. QUANTITY ON ORDER:				18. TARGET DATE FOR OBLIGATION:		19. LOCAL USE:
20. QUANTITATIVE AND CHANGE DATA						
ELEMENT	U/M	QUANTITY	UNIT PRICE	TOTAL PRICE		
a. PRIOR		N/A				
A. TOLERANCE USED						
c. INCREASE		N/C		N/C		
d. DECREASE						
e. CURRENT		N/A				
f. TOLERANCE				NONE		
21. REPORT CODE: A				22. TYPE OF FINANCING: 6		Funds Certified
23. DESCRIPTION OF WORK AUTHORIZED/SPECIAL INSTRUCTIONS/INCLOSURES:						
<p>The purpose of this amendment is to provide the following list of major components applicable to the Product Improvement Test of one (1) each Truck, Utility, 1/4 Ton, M151 (with solid axle rear suspension):</p> <p><u>List of New Major Components</u></p> <ul style="list-style-type: none"> <li>(1) Solid Rear Axle Assembly</li> <li>(2) Front Differential Assembly</li> <li>(3) Front Propeller Shaft Assembly</li> <li>(4) Rear Propeller Shaft Assembly</li> <li>(5) Transfer Gear Case Assembly</li> <li>(6) Rear Leaf Springs</li> <li>(7) Muffler Tailpipe</li> <li>(8) Front and Rear Shock Absorbers</li> <li>(9) Front Coil Springs</li> <li>(10) Body Assembly</li> <li>(11) Rear Brake Line</li> </ul>						
23-1 This is a <input checked="" type="checkbox"/> Project Order, Fixed Price; <input checked="" type="checkbox"/> Project Order; Cost Reimbursable; <input checked="" type="checkbox"/> Intra-Army Order for Reimbursable Work or Service. The work or services will be performed as ordered herein. Expiration date of this order: 31 DEC 1966						
23-2 The above terms and conditions are satisfactory and are accepted.						
Typed Name & Title of Accepting Officer				Signature		Date
ADDRESS				DATA		
UNIT PAGE				PAGE		COMBINED
PACKING LEVEL						



OFFICE OF THE PROJECT MANAGER  
GENERAL PURPOSE VEHICLES  
UNITED STATES ARMY MOBILITY COMMAND  
WARREN MICHIGAN 48090

AMCPM-GP-TLV

5 April 1966

SUBJECT: Product Improvement Test of Truck,  
Utility, 1/4 Ton, 4x4, M151 (Solid  
Axle Rear Suspension)

TO: Commanding Officer  
Aberdeen Proving Ground  
ATTN: STEAP-DS-TU, Mr. D. Liechty  
Aberdeen, Maryland

Delete the distribution list for reporting  
test results in Work Directive PRON 30-6-GP794-  
01-30-K2, and replace it with the following  
distribution:

a. Distribution list for formal report:

Project Manager's Office,  
General Purpose Vehicles  
Michigan Army Missile Plant  
Warren, Michigan 48090  
ATTN: AMCPM-GP-TLV - 20 copies

Commanding General  
U. S. Army Tank-Automotive Center  
Warren, Michigan 48090  
ATTN: SMOTA-RTT - 2 copies

Commanding Officer  
Yuma Proving Ground  
Yuma, Arizona 85364 - 1 copy

AMCPM-GP-TLV

5 April 1966

SUBJECT: Product Improvement Test of Truck,  
Utility, 1/4 Ton, 4x4, M151 (Solid  
Axle Rear Suspension)

Commanding Officer  
Aberdeen Proving Ground  
Aberdeen Proving Ground, Maryland 21005  
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AMCPM-GP-TLV

5 April 1966

SUBJECT: Product Improvement Test of Truck,  
Utility, 1/4 Ton, 4x4, M151 (Solid  
Axle Rear Suspension)

Commanding General  
U. S. Army Test & Evaluation Command  
Aberdeen, Maryland 21005  
ATTN: AMSTE-BB - 1 copy

Commanding Officer  
U. S. Army Armor Board  
Fort Knox, Kentucky  
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FOR THE PROJECT MANAGER:

*Robert A. Haysler*  
for LOUIS MORTENSON  
Chief, Technical Management Division

Copies furnished:  
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NNNNZCZCARK784EUA432YEA777

DATE: 10 JUN 66

RR RUEPARA

ACTION: D&PS

DE RUCDGBB 36M 1601916

ZNR UUUUU

R 191900Z

FM PROJ MGR GPV MICH ARMY MISSILE PLANT WARREN MICH

TO RUEPARA/CO ABERDEEN PROVING GROUND MD

INFO RUEPARA/CG US ARMY TEST & EVALUATION COMMAND ATTN AMSTE-NB

COL SNEIDER APC MD

BT

UNCLAS TT6-4887 FOR STEAP-DS-TU, MR. LIECHTY FROM AMCPM-GP-T

SUBJ: PRODUCT IMPROVEMENT TEST OF M151A1 TRUCK MODIFIED WITH  
SOLID REAR AXLE

1. IT IS REQUESTED THAT VEHICLE 2J7110 (M151A1) BE SHIPPED TO  
FORD MOTOR CO., SPECIAL MILITARY VEHICLES OPERATIONS, 2001 BEECH  
DALY RD, DEARBORN HEIGHTS, MICH, ATTN: MR. F. AVEY, AS SOON AS  
POSSIBLE. SHIP THE VEHICLE BY COMMERCIAL TRUCK CARRIER COD,  
FORD MOTOR CO.

2. THE PURPOSE OF THIS ACTION IS TO PERFORM THE NECESSARY REPAIRS  
TO ALLOW CONTINUATION OF DURABILITY TESTING OF THE VEHICLE

BT

NNNNZCZCARK

COPY/es

NNNZCZCARK 377EUA823YEC308

RR RUEPARA

DATE: 9 AUG 66

ACTION: D&PS

DE RUGDGBB 18M 2201816

ZNR UUUUU

R 081735Z AUG 66

FM PROJ MGR GPV MICH ARMY MISSILE PLANT WARREN MICH

TO CO ABERDEEN PROVING GROUND MARYLAND

BT

UNCLAS S-4566 FOR STEAP-DS-TU, D. LIECHTY FROM AMCPM-GP-T

SUBJECT: SOLID AXLE TEST PROGRAM

IT IS REQUESTED THAT NO LUBRICATION OF THE SOLID AXLE WHEEL  
BEARING BE ACCOMPLISHED FOR THE DURATION OF THE TEST. THIS REQUEST  
DOES NOT NEGATE REPLACEMENT OF THE WHEEL BEARINGS OR ON THE  
TEST VEHICLE WHEN NECESSARY.

BT

COPY/es

NNNN0ZCAFA933

RTTU JAW RUCIFDA5224 3361424-UUUU--RUEOFAA.

ZNR UUUUU

R 021420Z DEC

DATE: 2 DEC 66  
ACTION: D&PS  
INFO: INSTAL SUP  
TRANSP

FM PROJ MGR GPV MAMP WARREN MICH

TO RUEOFAA/CO DEVELOPMENT & PROOF SERVICES APG MD

INFO RUEOFFA/CG USATECOM APG MD

BT

UNCLAS TT12-4855 FOR D&PS, STEAP-DS-TU, MR. D. LIECHTY;

USATECOM, AMSTE-BB, MR. C. WATERS

SUBJECT CLN PRODUCT IMPROVEMENT TEST OF TRUCK, UTILITY

1/4 TON, 4X4, M151A1 (MODIFIED WITH SOLID REAR AXLE), VEHICLE NO. 2J7110

1. THIS OFFICE AUTHORIZES DELETION OF THE FULL LOAD COOLING  
AND THE DRAW BAR PULL TESTS FROM THE TEST DIERCTIVE.

2. AT COMPLETION OF THE TEST, IT IS REQUESTED THAT THE TEST  
VEHICLE BE SHIPPED TO FORD MOTOR CO., SPECIAL MILITARY VEHICLES  
OPERATIONS, 2001 BEECH DALY RD, DEARBORN HEIGHTS, MICH., ATTN CLN  
MR. F. AVEY. ALSO, IT IS REQUESTED THAT THE VEHICLE BE RETURNED IN  
AN AS IS CONDITION AND NO REPAIRS BE MADE.

3. IN ADDITION, ALL SPARE PARTS PECULIAR TO THE TEST VEHICLE  
ARE TO BE SHIPPED TO THE ABOVE ADDRESS

BT

AD \_\_\_\_\_ Accession No. \_\_\_\_\_  
Development and Proof Service, Aberdeen Proving Ground, Md. 21005  
Final Report of USATECOM Project No. 1-6-4030-12, Product Improvement Test of Truck,  
Utility, 1/4-Ton, 4x4, M151, Modified with Solid Rear Axle, March 1967  
RDT&E Project No. Not Available, Report No. DPS-2309  
Author C. M. Bryzek, Jr.  
Secondary distribution controlled by the Project Manager  
54 pages, 18 illustrations

Unclassified Report

A product improvement test was conducted on a truck, utility, 1/4-ton, 4x4, M151, modified with solid rear axle, at Aberdeen Proving Ground (APG) from 12 April to 30 December 1966. The purpose of this test was to determine the engineering performance and durability characteristics of the vehicle. The vehicle was subjected to limited engineering performance tests and 20,000-mile durability test. It was concluded that the M151 modified with solid rear axle was unsatisfactory due to lack of durability of a majority of the modified components.

AD \_\_\_\_\_ Accession No. \_\_\_\_\_  
Development and Proof Service, Aberdeen Proving Ground, Md. 21005  
Final Report of USATECOM Project No. 1-6-4030-12, Product Improvement Test of Truck,  
Utility, 1/4-Ton, 4x4, M151, Modified with Solid Rear Axle, March 1967  
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Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D		
(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)		
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Development and Proof Services Aberdeen Proving Ground, Maryland 21005		Unclassified
		2b. GROUP
3. REPORT TITLE		
PRODUCT IMPROVEMENT TEST OF TRUCK, UTILITY, 1/4-TON, 4X4, M151, MODIFIED WITH SOLID REAR AXLE		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)		
Final Report 12 April through 30 December 1966		
5. AUTHOR(S) (Last name, first name, initial)		
Bryzek, C. M., Jr.		
6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
MARCH 1967	54	0
8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)	
Not applicable	DPS-2309	
b. PROJECT NO.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
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10. AVAILABILITY/LIMITATION NOTICES		
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11. SUPPLEMENTARY NOTES		12. SPONSORING MILITARY ACTIVITY
None		USATACOM
13. ABSTRACT		
<p>A product improvement test was conducted on a truck, utility, 1/4-ton, 4x4, M151, modified with solid rear axle, at Aberdeen Proving Ground (APG) from 12 April to 30 December 1966. The purpose of this test was to determine the engineering performance and durability characteristics of the vehicle. The vehicle was subjected to limited engineering performance tests and a 20,000-mile durability test. It was concluded that the M151 modified with solid rear axle was unsatisfactory due to lack of durability of a majority of the modified components.</p>		

DD FORM 1473  
1 JAN 64

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14. KEY WORDS	LINK A		LINK B		LINK C	
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REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
PROGRAM EXECUTIVE OFFICE  
COMBAT SUPPORT & COMBAT SERVICE SUPPORT  
6501 EAST 11 MILE ROAD  
WARREN, MICHIGAN 48397-5000

SFAE-CSS

22 MAR 2013

MEMORANDUM FOR Defense Technical Information Center (DTIC-OQ), 8725 John J. Kingman Road, Fort Belvoir, VA 22060-6218

SUBJECT: Change of Classification Level to 4M151 Truck Documents

1. Reference Defense Technical Information Center (DTIC) Infosec "RE: M151A2 Documents retrieval and review" direction email of 14 December 2012.
2. In accordance with the above reference, please change the classification and distribution level for the following documents:
  - a. Document.
    - (1) The DTIC AD#: ADB271644
    - (2) Title: M151 Transmission Clutch Hub Insert – P/N 7059129
    - (3) Date of Document: 29 February 1972
    - (4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.
    - (5) Reason for Change: This document has been reviewed for Operations Security (OPSEC) and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.
    - (6) Date of Change: Immediately

b. Document 2.

- (1) The DTIC AD#: AD0474825
- (2) Title: ENGINEER DESIGN TEST OF TRUCK, UTILITY, 1/4-TON, 4X4, M151 (RIDE AND HANDLING CHARACTERISTICS)
- (3) Date of Document: 15 December 1965

SFAE-CSS

SUBJECT: Change of Classification Level to 4M151 Truck Documents

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

c. Document 3.

(1) The DTIC AD#: AD0857240

(2) Title: Product Improvement Test of Truck, Utility, 1/4-TON, 4X4, M151 Series with Modified Independent Rear Suspension System

(3) Date of Document: 27 June 1969

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

d. Document 4.

(1) The DTIC AD#: ADB273320

(2) Title: Bonded vs. Riveted Brake Lining Test

(3) Date of Document: 12 January 1977

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

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SUBJECT: Change of Classification Level to 4M151 Truck Documents

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

e. Document 5.

(1) The DTIC AD#: AD0810372

(2) Title: Product Improvement Test of Truck, Utility, 1/4-TON, 4X4, M151 Modified with Solid Rear Axle

(3) Date of Document: March 1967

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

(6) Date of Change: Immediately

f. Document 6.

(1) The DTIC AD#: ADB271624

(2) Title: Transmission Cluster Gear (M151 Vehicle)

(3) Date of Document: 06 March 1972

(4) New Distribution/Classification: Distribution A. Approved for public release; distribution is unlimited.

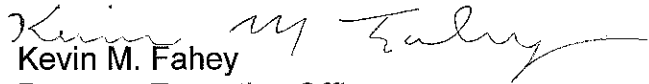
(5) Reason for Change: This document has been reviewed for OPSEC and has been deemed to contain no OPSEC concerns. The documents are for the M151 Truck that has not been in the military inventory since the early 1980s; the vehicle and associated documents are obsolete.

SFAE-CSS

SUBJECT: Change of Classification Level to 4M151 Truck Documents

(6) Date of Change: Immediately

3. The Point of Contact for this action is Robert Anick, Sr, email:  
robert.d.anick.civ@mail.mil or COM (586) 282-8448.

  
Kevin M. Fahey  
Program Executive Officer,  
Combat Support & Combat Service Support